



BILL RICHARDSON  
Governor  
DIANE DENISH  
Lieutenant Governor

NEW MEXICO  
ENVIRONMENT DEPARTMENT

*Ground Water Quality Bureau*

Harold Runnels Building  
1190 St. Francis Drive, P. O. Box 5469  
Santa Fe, NM 87502-5469  
Phone (505) 827-2900 Fax (505) 827-2965  
www.nmenv.state.nm.us



RON CURRY  
Secretary  
JON GOLDSTEIN  
Deputy Secretary

**Memorandum**

**To:** LaDonna Turner, Site Assessment Manager  
Technical and Enforcement Branch  
U.S. Environmental Protection Agency, Region 6

**Date:** September 10, 2009

**From:** Dana Bahar, Manager, Superfund Oversight Section  
Ground Water Quality Bureau, New Mexico Environment Department

**Subject:** Pre-CERCLIS Screening Assessment of Barbara J #1 mine, McKinley  
County, New Mexico: Further action under CERCLA is recommended

---

<b>Site name</b>	Barbara J #1 mine	<b>Street address</b>	not applicable
<b>City</b>	not applicable	<b>State</b>	New Mexico
<b>County</b>	McKinley	<b>Zip code</b>	not applicable
<b>Latitude</b>	35° 19' 42.97" N	<b>Longitude</b>	107° 49' 47.74" W

**Site physical description:** The Barbara J #1 mine site currently has a partially-caved shaft, an open bore or vent hole, a sedimentation pond, a concrete pad, a core house site, and several waste limestone rock piles remaining from uranium mining activities. The waste piles emit elevated levels of radioactivity in comparison to background values (assumed to be in the range of 10 to 40 counts per second [cps] from data collected at nearby sites), border drainage courses, and show evidence of erosion.

**Site identification:** Potential alluvial ground water contamination within the Grants Mineral Belt was identified because background standards established for the contaminants of concern for ongoing remedial action associated with the Homestake Mining Company NPL site (CERCLIS NMD0007860935) are generally higher than Maximum Contaminant Levels (MCLs). NMED conducted sampling of private residential wells in subdivisions located in the vicinity of the HMC site, and found that the majority had one or more contaminant concentrations exceeding MCLs.

**Site summary:** Observations made during a July 1, 2009 site visit are shown on the accompanying figure. The highest radioactivity level was measured during site reconnaissance at an area of waste limestone rock (625 cps). The waste piles are marked by erosional rills, indicating that waste may be dispersed downstream. The shaft is fenced, but the borehole is open and unfenced. Remnants of a liner are visible within the sedimentation pond. The area of the core house has slightly elevated radioactivity (92 cps), and is marked by numerous core remnants. Contamination of vicinity soils and surface drainages by precipitative erosion and wind dispersion comprise the primary contaminant pathways that may be associated with this site. Additionally, site runoff of contaminated wastes may

September 10, 2009

impact ground water quality either through seepage through alluvium or by direct entry to the subsurface via the open hole and shaft.

---

**Targets:** Residences are located near the junction of State Hwy. 605 and 509, approximately 3.1 air-miles northeast of the Site. Another residence is located along Haystack Road approximately 0.9 air-miles west-northwest of the Site, from which another residence is visible further to the west. Other potential targets may include cattle and wildlife.

Closest well sampled to date: irrigation well SMC-22 (0.28 air-miles; 48.2 µg/l total uranium in 2009 sampling [uranium Maximum Contaminant Level=30 µg/l]).

---

**Site ownership and Potential Responsible Parties:** Surface and mineral rights reportedly are held by the Bureau of Land Management (BLM). The Mid-Continent Uranium Company last operated the site in 1968.

---

**File review:** NMED staff reviewed the following files:

- Database compiled by Mining and Minerals Division of the New Mexico Energy, Minerals, and Natural Resources Department (07/20/2007)
- Anderson, Orin J., 1980. "Abandoned or inactive uranium mines in New Mexico".
- McLemore, Virginia T. and William L. Chenoweth, 1991. "Uranium mines and deposits in the Grants district, Cibola and McKinley Counties, New Mexico." New Mexico Bureau of Mines and Mineral Resources Open-file report 353.
- Golder Associates, 2009. "Findings of Barbara J Sites, Abandoned uranium mine lands pilot study conducted March—May 2009." Draft Technical Memorandum.
- Rappaport, Linda, "Uranium deposits of the Poison Canyon ore trend, Grants District," in "Geology and technology of the Grants Uranium Region, 1963. State Bureau of Mines and Mineral Resources.
- U.S. Geological Survey, 1997. "Gallup quadrangle NURE HSSR study." OFR-97-492.

---

**Site reconnaissance:** NMED staff conducted a Site reconnaissance on July 1, 2009.

---

**Recommendations:** A release of CERCLA hazardous substances has been documented at the site. NMED recommends further investigation under CERCLA to assess the risk posed by the site using the Hazard Ranking System.

NMED recommends that the investigation include the following:

1. Sample sediments along drainages to characterize extent of Site-derived waste dispersion.
2. Investigate and characterize ground water impacts.

In addition NMED recommends the following actions be performed to address immediate threats to public health and the environment:

1. Remove waste with elevated radioactivity.
2. Plug open shaft and well/vent holes.

Ms. LaDonna Turner, EPA Region 6 Site Assessment Manager

RE: Pre-CERCLIS screening Assessment of Barbara J #1 mine, McKinley County, New Mexico

September 10, 2009

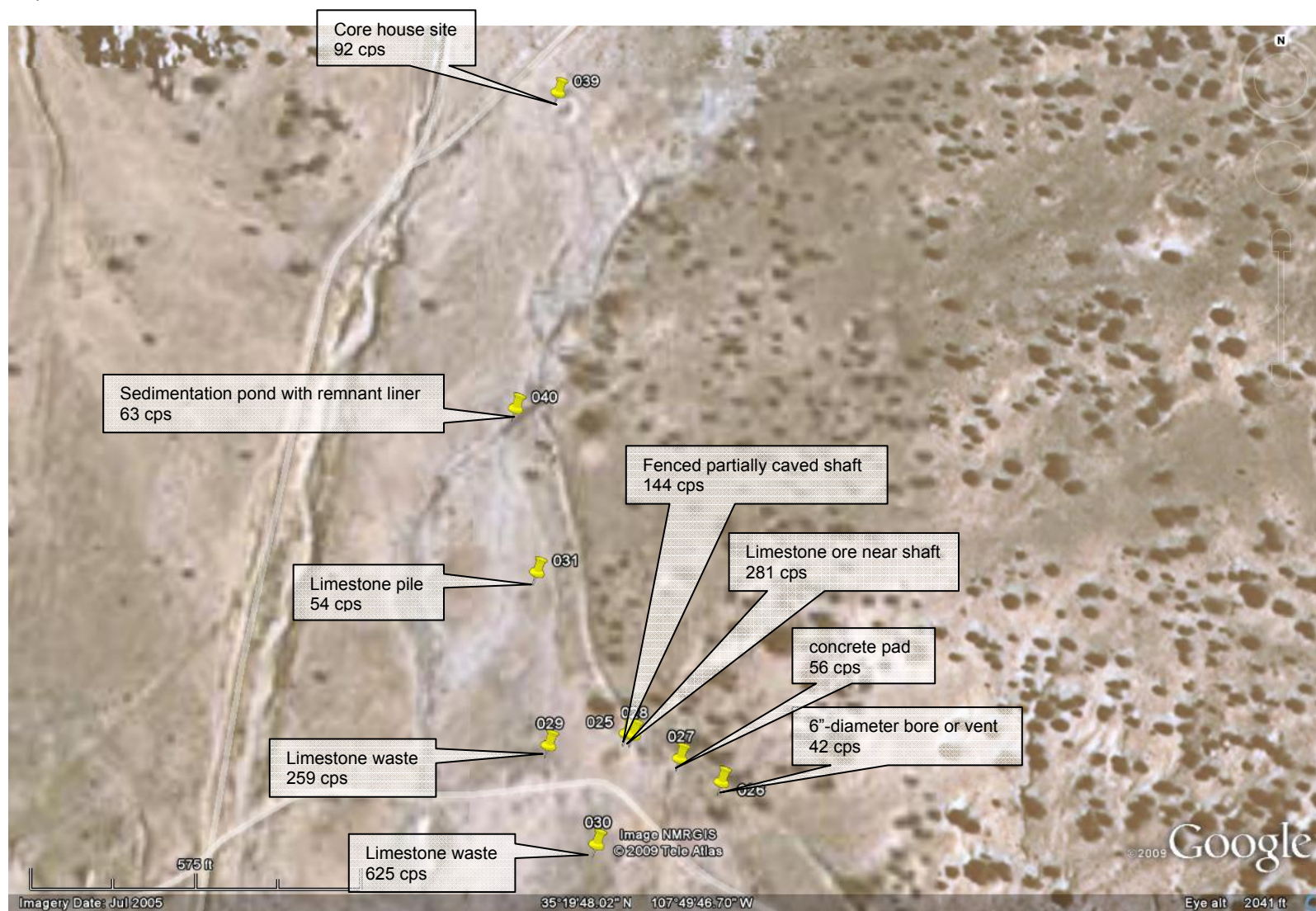


Figure 1: Barbara J #1 Mine—measurements taken on July 1, 2009.